

What is claimed is:

1. A lighting apparatus using microwave, comprising:
a resonator excluding microwave and transmitting a light;
5 a waveguide transmitting the microwave into the resonator;
a microwave generating means installed on the side of the waveguide and
oscillating microwave into the waveguide; and

a bulb placed at the center of the resonator and emitting light by
generating a plasma by the microwave transmitted through the waveguide,
10 wherein said waveguide is placed at an internal domain of the resonator.

2. The apparatus of claim 1, wherein the resonator has a sphere
shape, and the waveguide is installed within the radius of the resonator.

3. The apparatus of claim 2, wherein the resonator has an opened
portion so as to place the waveguide, and the waveguide is fixed to the resonator
15 by being inserting into the opened portion of the resonator.

4. The apparatus of claim 3, wherein outwardly extended flange
20 portions are respectively formed at the resonator and waveguide, and respectively
fixed to the resonator and the waveguide by fixing means.

5. The apparatus of claim 2, wherein the waveguide has a conic
shape, the vertex of the waveguide is placed at the center of the resonator, the
25 bottom portion of the waveguide is formed as a curved surface so as to be same

as the sphere shape of the resonator and is placed so as to correspond to an external extended portion of the resonator.

6. The apparatus of claim 5, wherein the waveguide is constructed
5 with a conic shaped body portion having an opened bottom portion and a cover portion fixed to the opened bottom portion of the body portion.

7. The apparatus of claim 5, wherein the waveguide has at least one
10 outlet at an inclined plane of the internal area of the resonator in order to transmit microwave into the resonator.

8. The apparatus of claim 7, wherein a plurality of outlets are
15 lengthily formed in the radius direction centering around the vertex of the waveguide.

9. The apparatus of claim 7, wherein the outlet lengthily formed in the
radius direction and the outlet lengthily formed in the circumference direction
centering around the vertex of the waveguide are arranged.

20 10. The apparatus of claim 5, wherein the vertex of the waveguide is concave so as to place the bulb.

25 11. The apparatus of claim 10, wherein a reflecting means is installed between the bulb and the concave portion of the waveguide in order to reflect light emitted from the bulb in the front.

12. The apparatus of claim 11, wherein the reflecting means is a reflecting mirror installed between the bulb and the concave portion of the waveguide.

13. The apparatus of claim 11, wherein the reflecting means is a reflecting layer coated onto the outer surface of the concave portion of the waveguide.

14. The apparatus of claim 1, further comprising:
a casing combined and fixed to the bottom portion of the waveguide at the external region of the extended portion of the resonator in order to cover the microwave generating means, a high voltage generator and a cooling unit.

15. The apparatus of claim 1, wherein the bulb is placed at the center of the resonator.

16. The apparatus of claim 1, wherein the microwave generating means is fixed to the waveguide at the external region of the extended portion of the resonator.

17. The apparatus of claim 1, further comprising
a rotation shaft connected to the bulb and penetrating the waveguide; and
a bulb motor placed at the bottom surface of the waveguide and rotating
the bulb by being connected to the end of the rotation shaft.